Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously presented) A computer tomography method having the following steps:

a) generation by a beam source of a beam bundle passing through a periodically moving object,

b) generation of a relative movement between the beam source on the one hand and the object on the other hand, which comprises a rotation about an axis of rotation,

c) acquisition by means of a detector unit, during the relative movement, of measured values that are dependent on the intensity in the beam bundle on the other side of the object, an acquisition time being allocated to each measured value and to the beam causing the respective measured value,

d) detection of a movement signal depending on the movement of the object by means of a movement-detection device and determination of periods of the periodic movement by means of the detected movement signal,

e) reconstruction of a computer tomography image of the object from the measured values, wherein only measured values whose acquisition times lie within the periods in time intervals are used, which are so determined that a similarity measure applied to intermediate images of a same subregion of the object is minimized, wherein different intermediate images are reconstructed using measured values from time intervals from different periods.

2. (Previously presented) A computer tomography method as claimed in claim 1, wherein in step e) initially in each case a time interval having a pre-determinable interval width is arranged at a pre-determinable interval position in each period, in that each period forms a respective period pair with a chronologically immediately preceding period and a chronologically immediately following period, and in that for each period pair the following steps are carried out:

i) determination of a subregion of the object, which is traversed both by beams whose acquisition instants lie in the time interval of the one period and by beams whose acquisition instants lie in the time interval of the other period,

ii) generation of a first intermediate image by reconstruction of the subregion exclusively using measured values whose acquisition instants lie in the time interval of the one period,

iii) generation of a further intermediate image by reconstruction of the subregion exclusively using measured values whose acquisition instants lie in the time interval of the other period,

iv) determination of a similarity value by applying a similarity measure to the first and the further intermediate image,

v) modifying the interval width and/or the interval position of the time interval of the other period, and repetition of the steps iii) to v) until a break-off criterion dependent on the similarity value is satisfied.

3. (Previously presented) A computer tomography method as claimed in claim 2, wherein chronologically consecutive period pairs are taken into consideration in succession in accordance with steps i) to v).

4. (Previously presented) A computer tomography method as claimed in claim 2, wherein the break-off criterion in step v) leads to a termination when the similarity value falls below a predetermined similarity threshold.

5. (Previously presented) A computer tomography method as claimed in claim 1, wherein the application of the similarity measure to two intermediate images of the same subregion comprises the following steps:

- division of the subregion into several subdivision regions,
- subtraction of an image value of a subdivision region from the one intermediate image from an image value of the same subdivision region from the other intermediate image for each subdivision region to form a respective absolute difference,
- summation of the absolute differences, wherein the resulting sum is the similarity value of the similarity measure.

6. (Previously presented) A computer tomography method as claimed in claim 1, wherein the measured values whose acquisition instants lie in a time interval are weighted before the reconstruction of the intermediate images and the CT image with a weighting that decreases in size the further away from the middle of a time intervals the acquisition instant of a measured value lies.

7. (Previously presented) A computer tomography method as claimed in claim 1, wherein the reconstruction of the intermediate images and/or the CT image is effected with a filtered back-projection.

8. (Previously presented) A computer tomography method as claimed in claim 1, wherein the intermediate images are reconstructed with a lower spatial resolution than the CT image.

9. (Previously presented) A computer tomography method as claimed in claim 1, wherein the detected movement signal is an electrocardiogram.

10. (Previously presented) A computer tomography method as claimed in claim 9, wherein a period determined in step d) corresponds to the distance of time between two adjacent R-peaks of the electrocardiogram.

11. (Previously presented) A computer tomograph for carrying out the method as claimed in claim 1, having

- a beam source for generating a beam bundle passing through a periodically moving object,
- a drive arrangement for generating a relative movement between the beam source on the one hand and the object on the other hand, which comprises a rotation about an axis of rotation,
- a detector unit for acquiring measured values that depend on the intensity in the beam bundle on the other side of the object, during the relative movement, wherein an acquisition

instant is allocated to each measured value and to the beam causing the respective measured value,

- a movement-detecting device for detecting periods of the periodic movement by means of a movement signal depending on the movement of the object,
- a reconstruction unit for reconstruction of a computer tomography image of the object from the measured values,
- a control unit for controlling the beam source, the drive arrangement, the detector unit, the movement-detection device and the reconstruction unit in accordance with the following steps:

a) generation by a beam source of a beam bundle passing through a periodically moving object,

b) generation of a relative movement between the beam source on the one hand and the object on the other hand, which comprises a rotation about an axis of rotation,

c) acquisition by means of a detector unit, during the relative movement, of measured values that are dependent on the intensity in the beam bundle on the other side of the object, an acquisition time being allocated to each measured value and to the beam causing the respective measured value,

d) detection of a movement signal depending on the movement of the object by means of a movement-detection device and determination of periods of the periodic movement by means of the detected movement signal,

e) reconstruction of a computer tomography image of the object from the measured values, wherein only measured values whose acquisition times lie within the periods in time intervals are used, which are so determined that a similarity measure applied to intermediate images of a same subregion of the object is minimized, wherein different intermediate images are reconstructed using measured values from time intervals from different periods.

12. (Previously presented) A computer readable storage medium encoded with instructions that when executed by a computer cause the computer to control a beam source, a drive device, a detector unit, a movement-detection device and a reconstruction unit of a computer tomograph for implementing the method as claimed in claim 1.

13. (Previously presented) The method of claim 1, wherein the movement-detecting device is an electrocardiograph.

14. (Currently amended) The method of claim [[14]] 1, wherein each intermediate image is reconstructed with data only from a time interval within a corresponding different one of the periods in time.

15. (Previously presented) The method of claim 1, wherein each period in time corresponds to a different R-R periods.

16. (Previously presented) The method of claim 2, wherein the modification to the time interval of the other period reduces motion between the first intermediate image, which is reconstructed exclusively using measured values from the one period, and the second intermediate image, which is reconstructed exclusively using measured values from the other time period, wherein the one and the other periods represent different R-R periods.

17. (Previously presented) The method of claim 5, wherein a first of the two intermediate images is reconstructed with data only from one of the different periods and a second of the two intermediate images is reconstructed with data only from the other of the different periods.

18 (Previously presented) The computer tomography of claim 5, wherein each region corresponds to a different voxel.

19. (Previously presented) An imaging system, comprising:

a source that generates radiation that traverses a periodically moving object, wherein the source rotates about an axis of rotation;

a detector that detects radiation traversing the object;

a movement-detection device that detects a movement signal indicative of a movement of the periodically moving object and determines periods of periodic movement based on the signal; and

a reconstructor that reconstructs an intermediate image for each period, wherein each image for each period is reconstructed with data from a time interval of the corresponding period, and the time interval is selected such that a similarity measure between two consecutive images for two different periods satisfies threshold criteria.

20. (Previously presented) An imaging method, comprising:

generating radiation that traverses a periodically moving object with a source that rotates about an axis of rotation;

detecting radiation that traverses the object;

detecting a movement signal indicative of a movement of the periodically moving object;

determining periods of periodic movement based on the signal; and

reconstructing an intermediate image for each period, wherein each image for each period is reconstructed with data from a time interval of the corresponding period, and the time interval is selected such that a similarity measure between two consecutive images for two different periods satisfies threshold criteria.